

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEVEN S. LEE
AND GAYLE W. MILLER

Appeal No. 96-0289
Application 07/935,301¹

ON BRIEF

Before GARRIS, WEIFFENBACH and OWENS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the examiner's final rejection of claims 1, 2 and 19. Claims 3-10 have been allowed. Claims 11-18 have been withdrawn from consideration by the examiner as being

¹ Application for patent filed August 26, 1992.

directed toward a nonelected invention.

THE INVENTION

Appellants' claimed invention is directed toward a method for forming a semiconductor fuse having a fusible metal link in contact with polysilicon, and a method for blowing such a fuse by passing electric current through the link to melt the link, wherein the melted link is absorbed into the polysilicon. Appellants state that absorbing the metal link into the polysilicon prevents the metal from growing back together to reconnect the fusible link (specification, page 2). Claims 1 and 19 are illustrative and read as follows:

1. A method for fabricating a semiconductor fuse, comprising:
providing an insulating layer:

forming a polysilicon pad on top of said layer; and

forming a fusible metal link on top of and in contact with said pad;

wherein a programming current through said link melts the metal which is absorbed by said polysilicon pad, thereby preventing the link's growback.

19. A method for blowing a fusible link by passing an electric current therethrough, comprising:
melting the link; and removing the melted link by absorbing it into polysilicon.

THE REFERENCES

Takemae et al. (Takemae)	4,903,111	Feb. 20, 1990
Choi	5,242,851	Sep. 7, 1993 (filed Jul. 16, 1991)

Fujita²
(Japanese Kokai)

64-77141

Mar. 23, 1989

THE REJECTIONS

Claim 19 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Fujita. Claims 1, 2 and 19 stand rejected under 35 U.S.C. § 103 as being obvious over Fujita in view of Choi and Takemae.

OPINION

We have carefully considered all of the arguments advanced by appellants and the examiner and agree with the examiner that the invention recited in appellants' claim 19 is anticipated by Fujita and that the invention recited in appellants' claims 1, 2 and 19 would have been obvious to one of ordinary skill in the art at the time of appellants' invention over the applied references. Accordingly, the aforementioned rejections will be affirmed.

Rejection of claim 19 under 35 U.S.C. § 102(b)

Fujita discloses a method for blowing a fusible metal link, which is positioned over a silicon nodule and polysilicon layer (Fig. 2(c)), by passing an electric current through the link so as to melt the link (page 5). The silicon nodule is formed by passing a large electric current through a metallic wiring layer (11) positioned over a polysilicon layer (12) (page 5). The heat generated causes the polysilicon

² Citations herein are to the English translation of this reference, which is of record.

to diffuse into the metallic wiring layer to form a solid solution, and when the polysilicon is cooled, crystals are deposited, thereby forming the silicon nodule and producing a constriction in the metallic wiring layer above the nodule (page 5). When electric current further is passed through the metallic wiring layer, the metallic wiring layer at the constricted portion is melted (pages 5-6).

Appellants argue that Fujita teaches that the polysilicon is diffused into the metal, which is directly in contrast to appellants' claimed method wherein metal is absorbed into polysilicon (brief, pages 6 and 10). We do not find this argument to be convincing because Fujita teaches (page 5) that after the polysilicon diffuses into the metal and forms a solid solution with it, the polysilicon is cooled and forms crystals which are deposited as nodule 15 on polysilicon layer 12. Since the nodule is formed by precipitation of polysilicon from a solid solution, it appears that the nodule comprises polysilicon which is available for absorption of metal when the current is passed through the metal to blow the fuse.

Appellants argue that it would not be possible for melted metal to be absorbed by Fujita's polysilicon pad 12 due to the intervening silicon nodule (15) (brief, page 6). Because, as in appellants' method, Fujita's constricted metal is melted and thereby severed by passing current through the metal (Fujita, page 6; appellants' specification, page 6), and because Fujita's metal layer is in contact with the silicon nodule and polysilicon layer 12, there is reason to believe that, as in appellants' method, the melted metal is absorbed by polysilicon in the nodule and/or polysilicon layer 12. In other words,

Fujita provides reason to believe that the absorption recited in appellants' claim 19 is an inherent characteristic of Fujita's method. Appellants therefore have the burden of providing evidence that appellants' claimed method differs from that disclosed by Fujita. *See In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990); *In re Best*, 562 F.2d 1252, 1254-55, 195 USPQ 430, 433 (CCPA 1977); *In re Swinehart*, 439 F.2d 210, 213, 169 USPQ 226, 229 (CCPA 1971). Because appellants have not carried this burden, we affirm the rejection of claim 19 under 35 U.S.C. § 102(b) over Fujita.

*Rejection of claims 1, 2 and 19
under 35 U.S.C. § 103*

At the outset, we note that appellants state that the claims stand or fall in two groups, where the first group is claims 1 and 2 and the second group is claim 19 (brief, page 5). We therefore limit our discussion to one claim in each group, namely, claims 1 and 19. *See In re Ochiai*, 71 F.3d 1565, 1566 n.2, 37 USPQ2d 1127, 1129 n.2 (Fed. Cir. 1995); 37 CFR § 1.192(c)(5)(1993).

Because claim 19 is anticipated by Fujita as discussed above, and because anticipation is the epitome of obviousness, we affirm the rejection of claim 19 under 35 U.S.C. § 103. *See In re Skoner*, 517 F.2d 947, 950, 186 USPQ 80, 83 (CCPA 1975); *In re Pearson*, 494 F.2d 1399, 1402, 181 USPQ 641, 644 (CCPA 1974).

Regarding appellants' claim 1, Fujita discloses forming a polysilicon pad on top of an insulating layer (page 8; Fig. 4). A fusible metal link is formed on top of and in contact with the pad, and a

current passed through the link melts the metal (page 5; Fig. 2). Fujita does not state that the current is programming current. However, appellants acknowledge that it was known in the art to melt such links by use of programming current.³ Also, the examiner argues that Takemae discloses (col. 5, lines 55-62) use of programming current to melt fuse links (final rejection, paper no. 10, page 3), and appellants do not challenge this argument (brief, page 7).

Appellants argue that Fujita's metal is not absorbed by a polysilicon pad (brief, pages 5-9). We are not persuaded by this argument for the reasons given above regarding the rejection of claim 19 under 35 U.S.C. § 102(b). *See Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 ("Whether the rejection is based on 'inherency' under 35 U.S.C. § 102, on 'prima facie obviousness' under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products.").

For the above reasons, we conclude, based on the preponderance of the evidence and argument in the record, that appellants' claimed invention would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103.⁴

³ It is axiomatic that our consideration of the prior art must, of necessity, include consideration of the admitted state of the art. *See In re Hedges*, 783 F.2d 1038, 1039-40, 228 USPQ 685, 686 (Fed. Cir. 1986); *In re Davis*, 305 F.2d 501, 503, 134 USPQ 256, 258 (CCPA 1962).

⁴ A discussion of Choi is not necessary to our decision.

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DECISION

The rejections of claim 19 under 35 U.S.C. § 102(b) as being anticipated by Fujita and of claims 1, 2 and 19 under 35 U.S.C. § 103 as being obvious over Fujita in view of Choi and Takemae are affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

BRADLEY R. GARRIS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
CAMERON WEIFFENBACH)	
Administrative Patent Judge)	APPEALS AND
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)	INTERFERENCES
)	
TERRY J. OWENS)	
Administrative Patent Judge)	

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Wayne P. Bailey
Symbios Logic Inc.
2001 Danfield Court, Mail Stop E
Fort Collins, Co 80525